

TRAFFIC BARRIERS

Guardrails and bridge railings serve a vital role on the highway system by preventing motorists from becoming involved in more serious accidents. Because most are designed to provide the best service at the lowest cost, aesthetic considerations generally have not been a high priority in highway barrier design. As a result, most guardrails and traffic barriers rarely add to a roadway's visual qualities, and in some cases, may actually detract from them.

Providing safe roadside barriers on scenic roads, parkways and visually significant highways is as important as safety on more typical roads. The aesthetic vision for this new highway corridor is that it be developed to blend harmoniously with the environment, as well as, create a visually distinctive roadway within the City of Rochester. When treated as part of the whole design, even guardrail and traffic barriers can contribute to good transportation design through better visual integration into the environment.

On this project, the Aesthetic Committee has recommended that Standard Mn/DOT concrete barrier designs be used wherever continuous traffic barrier is warranted, including within the highway median and along shoulder areas. In consideration for improved motorist safety and ease of maintenance they recommended use of compact, attenuating crash cushions at bridges in rural cross section areas, as well as, limited use of standard plate beam guardrail.

AESTHETIC DESIGN RECOMMENDATIONS

9.1 Design Considerations

Federal and state requirements abound for traffic barrier design. First, the system must meet the criteria specified in Test Level 3 of the National Cooperative Highway Research Program (NCHRP) Report 350, *Recommended Procedures for the Safety Performance Evaluation of Highway Features*. This report requires safety performance evaluation for all barrier systems and terminals used on Minnesota's highways. Secondly, barrier systems also must be constructible and maintainable without excessive cost. Most terminals have not been tested for NCHRP 350 compliance. They either have to be buried in the back slope or attached to a traditional guardrail section and then terminated with a NCHRP 350 approved terminal.

To address the concern for an aesthetically pleasing traffic barrier system, the Aesthetic Committee made several recommendations concerning the barriers of this project. First, that all decisions related to highway median treatment be coordinated with the fencing solutions because of the relationship between these elements as related the ability of the public to cross the highway. When right-of-way fencing is required, provide Mn/DOT's standard "low" traffic

barrier without glare screen (ie, Standard Plate No.8334A). When right-of-way fencing is not required, provide Mn/DOT's standard "tall" traffic barrier with glare screen (ie, Standard Plate No. 8336A).

When Mn/DOT's standard traffic barrier with glare screen is used, architectural treatment should be substituted for the area of the barrier that functions to provide glare control for the barrier system. Figure 9-1 illustrates this concept. It is compatible with conventional slip form paving techniques. This type of feature has been successfully used elsewhere on the federal highway system within our nation, including on a proposed reconstruction project on TH61 in Newport, Minnesota.

Although not shown on drawings, a preference also was expressed by the Aesthetic Committee for use of a constant slope traffic barrier throughout the project. This feature was recommended in an effort to accommodate the addition of the panel reveals discussed in Chapter 2 of this Design Guide. See Figures 2-22 and 3-2.

Figure 9-1: Traffic Barrier Design A continuous slip-formed accent reveal in the barrier top improves it's aesthetic appeal when a non-glare design is required.

Figure 9-2: Barrier Transition to Piers A smooth-flowing, continuous design was selected to reduce opportunity for debris collection in the bridge pier transition area.

9.2 Crash Cushions

Recognizing that Mn/DOT's standard solution for protecting motorists from highway median and shoulder hazards often involves a plate beam guardrail design, the Aesthetic Committee has recommended use of several designs that they considered would offer a better aesthetic solution, as well as, improved traffic safety. These designs (products) are described on Figure 9-3 of this Design Guide. All of the crash cushions recommended meet NCHRP Report 350, Test Level 3 requirements as required by federal policy direction. Another type that the committee suggested to be avoided is cone or barrel systems.

Because plate beam guardrail provides a safe barrier for protecting motorists from highway median and shoulder hazards and obstructions and is Mn/DOT's standard design, cost sharing should be anticipated by the City regarding the proprietary crash cushions recommended by the Aesthetic Committee for this project.

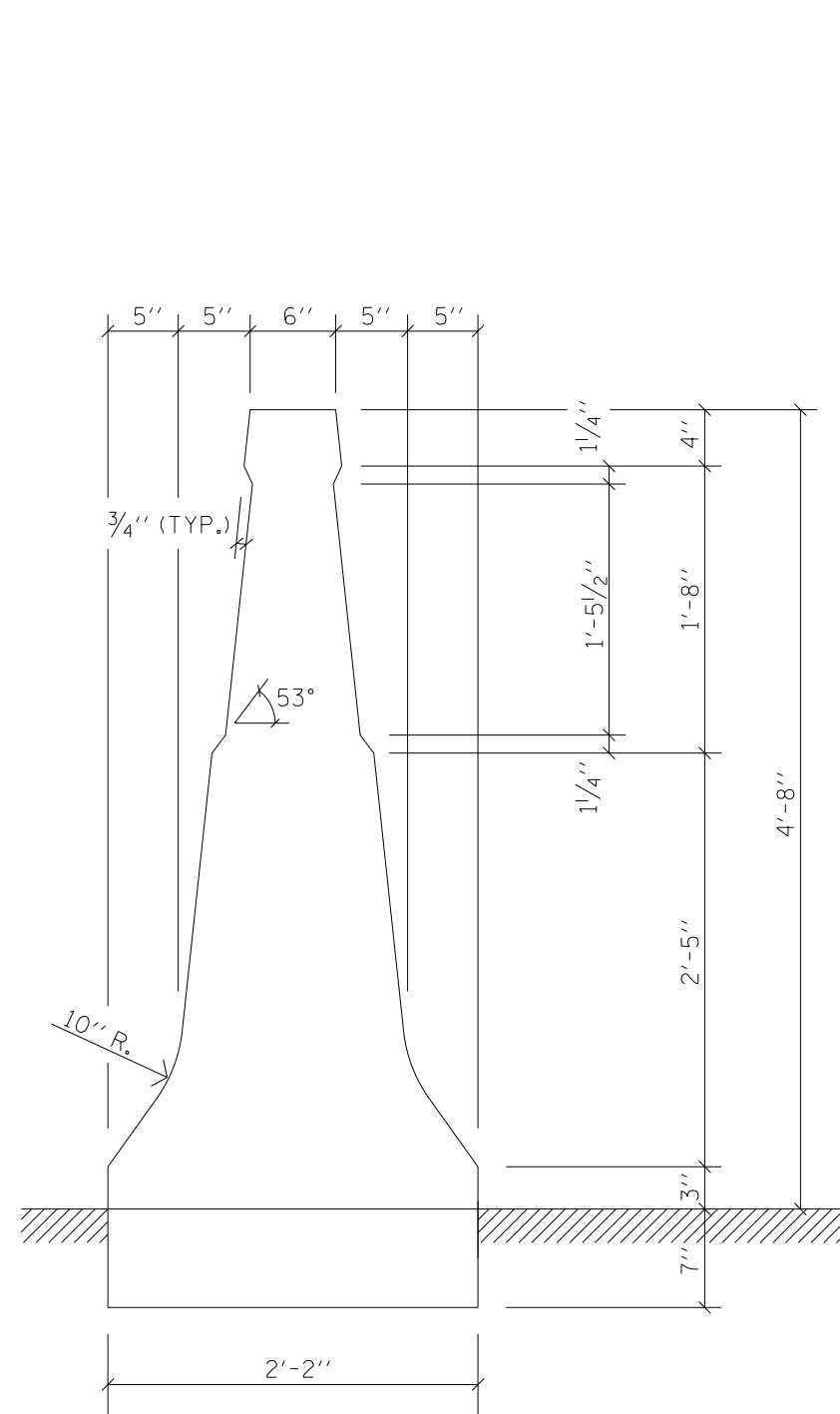
Figure 9-3: Terminal Cash Cushions The Aesthetic Committee recommended use of non-guardrail product designs to improve highway aesthetics, as well as, traffic safety.

9.3 Painting and Finishing

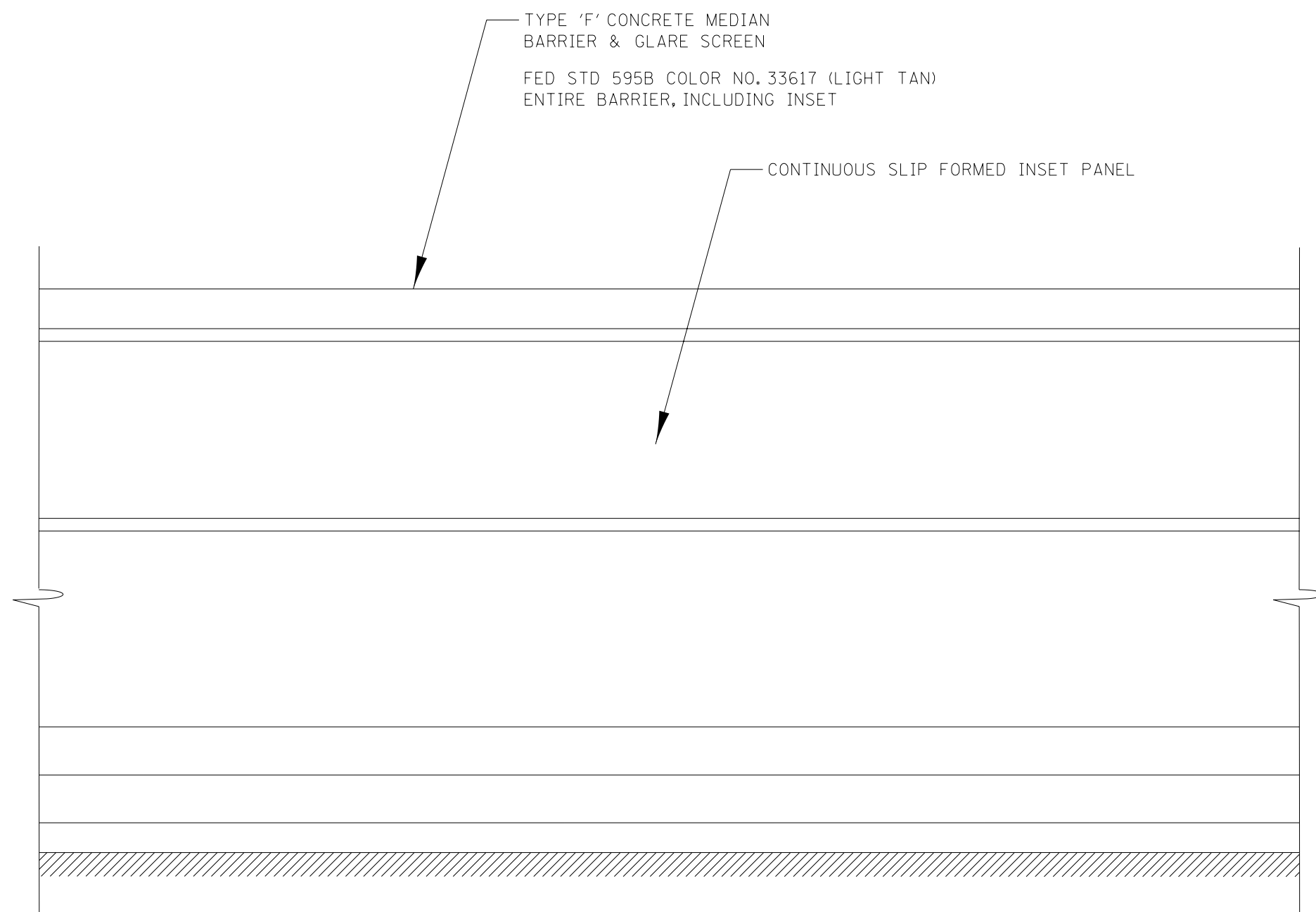
As an unifying design theme within the new highway corridor, the same color finishing

treatments described for bridges and structures should be provided for the concrete barrier of this project. The exposed surfaces should be painted in a color matching Federal Standard 595B Color No. 33617 (Light Tan). Payment for painting the traffic barrier should be made incidental to the concrete traffic barrier type constructed.

When standard plate-beam guardrail is specified, no additional painting or finishing requirements are recommended.



SECTION
MnDOT STANDARD PLATE
8336A



ELEVATION

Figure 9-1: TRAFFIC BARRIER DESIGN

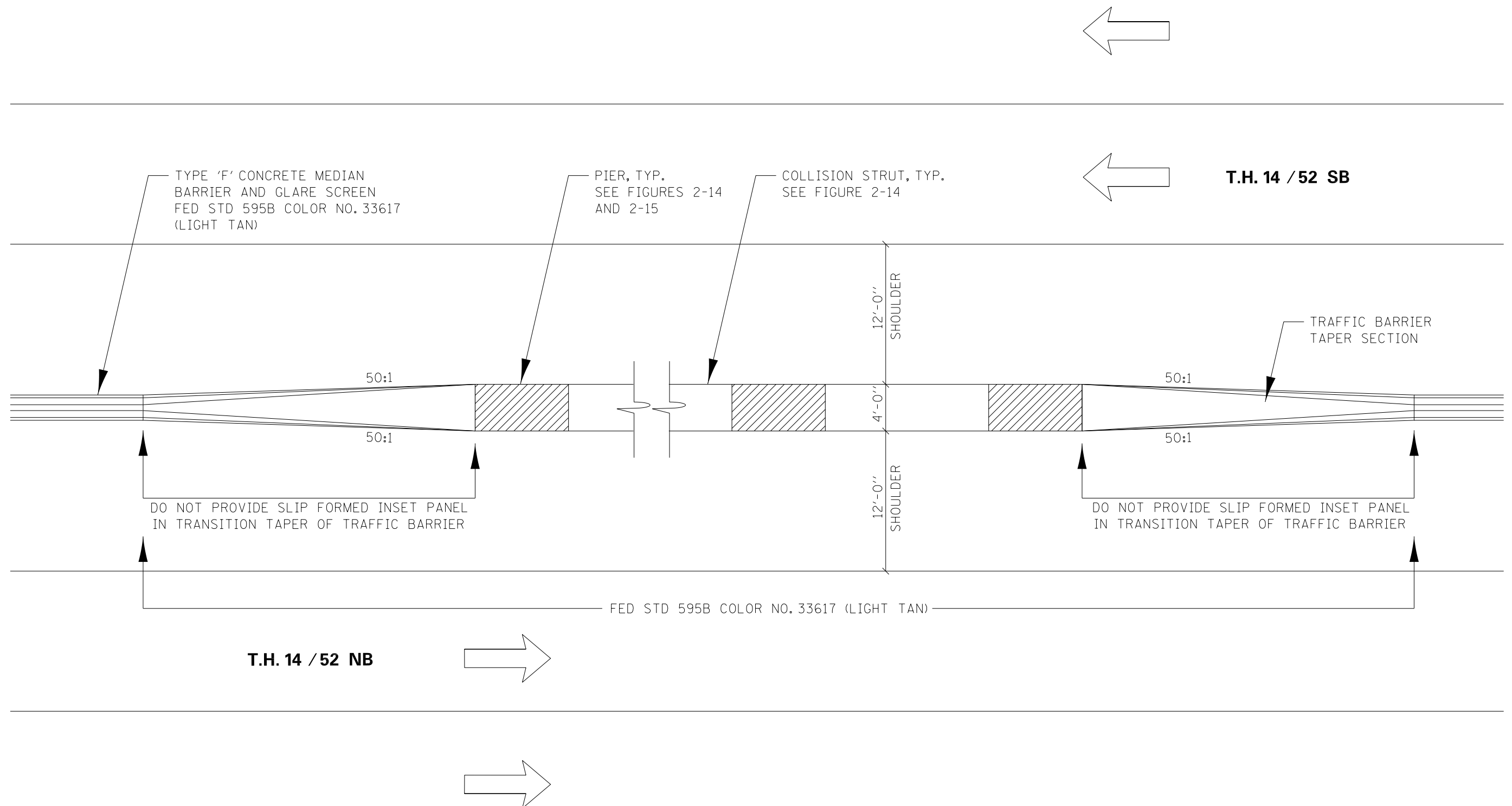


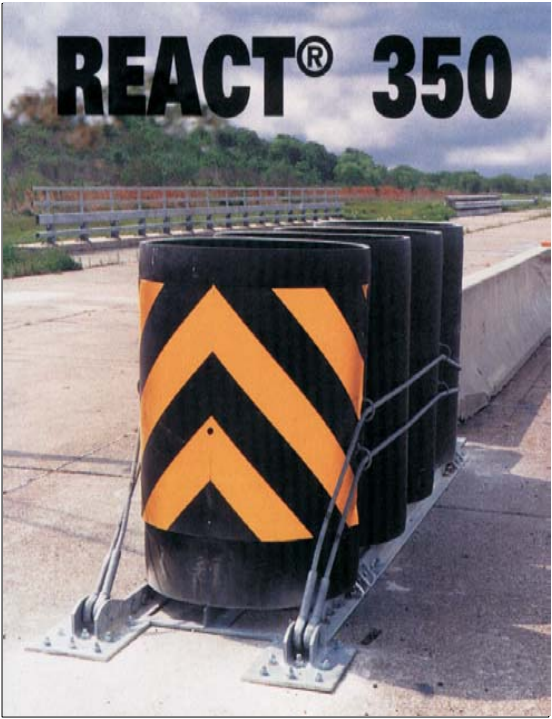
Figure 9-2: BARRIER TRANSITION TO PIERS



QUADGUARD
(PHOTO BY ENERGY ABSORTION SYSTEMS, INC.)



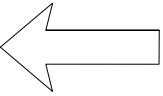
Mn/DOT STANDARD



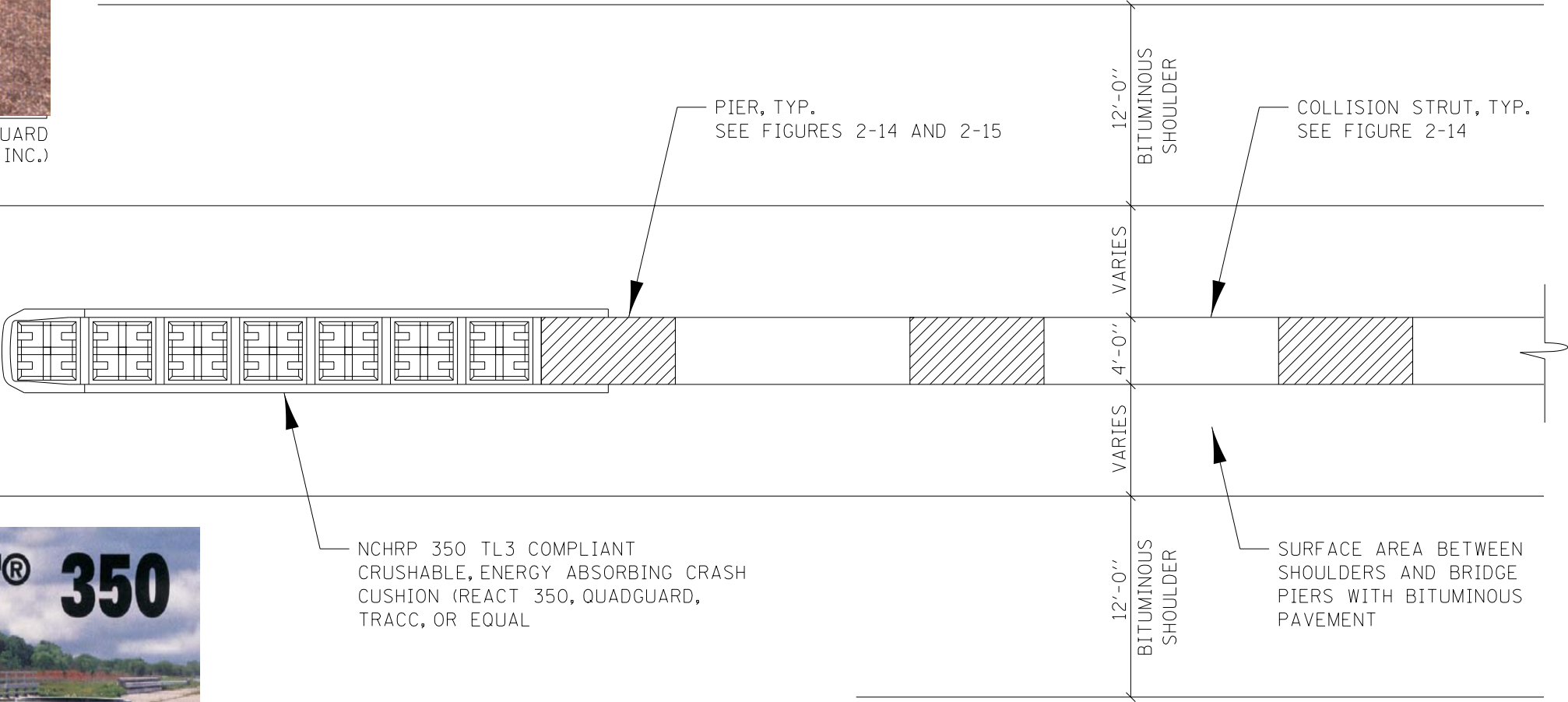
REACT 350
(PHOTO BY ROADWAY SERVICE, INC.)



TRACC SYSTEM
(PHOTO BY TRINITY INDUSTRIES, INC.)



T.H. 14 / 52 SB



T.H. 14 / 52 NB

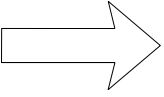


Figure 9-3: TERMINAL CRASH CUSHIONS